

REV.
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SAE AS27640

FEDERAL SUPPLY CLASS
3110

RATIONALE

IN ORDER TO BRING THE AS27640 DOCUMENT UP TO DATE WITH ALL THE REFERENCE DOCUMENTS, REVISION WAS CREATED. THE CHANGES MADE WERE EDITORIAL AND TO MAKE THE FORMAT THE SAME AS SIMILAR DOCUMENTS WITHIN THE WORKING GROUP. A CODE "E" FOR USE OF ZINC-NICKEL PLATING WAS IMPLEMENTED. THE ADDITION OF SPECIFYING TYPE I FOR MIL-PRF-23827 GREASE AND THE ADDITION OF THE CADMIUM NOTE WAS ALSO ADDED. SEAL MATERIAL POLYTETRAFLUOROETHYLENE SHEET PER AMS3666 WAS REMOVED.

NOTICE

UNDER DEPARTMENT OF DEFENSE POLICIES AND PROCEDURES, ANY QUALIFICATION REQUIREMENTS AND ASSOCIATED QUALIFIED PRODUCTS LIST ARE MANDATORY FOR DOD CONTRACTS. ANY REQUIREMENT RELATING TO QUALIFIED PRODUCTS LISTS / DATABASES (QPL/QPD'S) HAS NOT BEEN ADOPTED BY SAE AND IS NOT PART OF THIS TECHNICAL REPORT.

THE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE LATEST ISSUE OF: SAE AS7949.

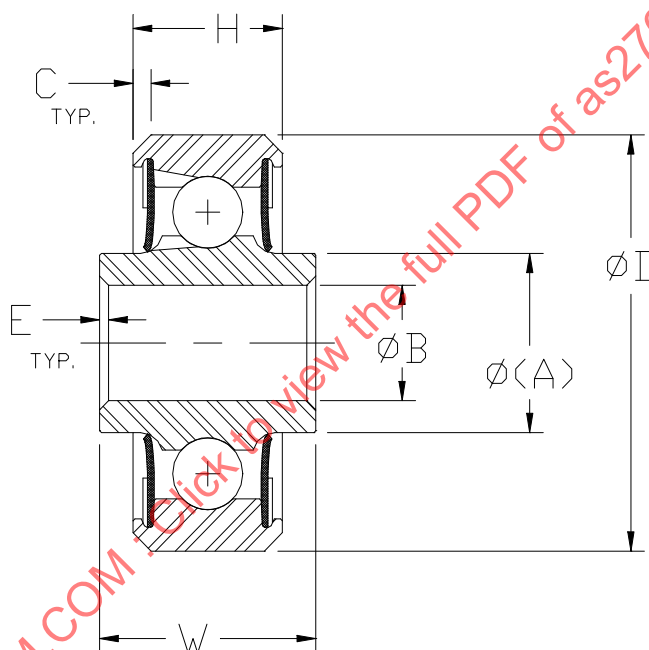
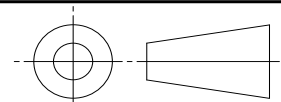


FIGURE 1 - PART CONFIGURATION

SAE values your input. To provide feedback on this Technical Report, please visit <http://www.sae.org/technical/standards/AS27640C>

THIRD ANGLE PROJECTION



CUSTODIAN: SAE AIRFRAME CONTROL BEARINGS GROUP

PROCUREMENT SPECIFICATION: SAE AS7949

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

(R) BEARING, BALL, AIRFRAME,
ANTI-FRICTION, HEAVY DUTY

SAE AS27640
SHEET 1 OF 3

REV.
C

TABLE 1 - DIMENSIONS AND LOADS

MS DASH NO.	øB BORE + .0000 - .0005	øD OUTSIDE DIAMETER + .0000 - .0005	W WIDTH INNER RING + .000 - .005	H WIDTH OUTER RING + .000 - .005	(øA) SHOULDER DIAMETER INNER RING (REF)	E 4/	C 3/	RADIAL LIMIT LOAD RATING LB	THRUST LIMIT LOAD RATING LB	5/ RADIAL LOAD RATING (LB) FOR AVERAGE LIFE OF 10 000 COMPLETE 90° CYCLES		WEIGHT POUNDS (APPROX)	Z/ MAXIMUM STARTING TORQUE (in-oz)
						CORNER CHAMFER X 45°							
						INNER RING BORE + .015 - .000	OUTER RING OD + .015 - .000						
-3A	.1900	.6250	.245	.203	.280	.005	.010	1560	700	1520	1260	.01	1
-3	.1900	.7774	.297	.270	.331	.005	.022	1880	900	1700	1450	.03	1
-4	.2500	.9014	.484	.335	.390	.005	.032	2680	1200	2410	2030	.04	1
-5	.3125	1.2500	.558	.375	.469	.015	.032	5620	2500	4900	3970	.09	1
-6	.3750	1.4375	.620	.469	.591	.015	.032	7910	3500	6540	5410	.15	2
-8	.5000	1.6875	.620	.500	.768	.015	.044	11 800	5200	9320	7700	.21	3
-10	.6250	1.9375	.620	.500	.850	.015	.044	14 100	6200	11 000	9060	.28	4

1/ ALL DIMENSIONS TO BE MET AFTER PLATING.

2/ OUT-OF-ROUND TOLERANCES: BORE: +.0002, -.0007; OUTER DIA: +.0005, -.0010.

3/ A RADIUS GIVING APPROXIMATELY THE SAME GRIP FOR STAKING THE BEARING IN THE HOUSING WILL BE ACCEPTABLE.

4/ A RADIUS GIVING APPROXIMATELY THE SAME FILLET CLEARANCE WILL BE ACCEPTABLE.

5/ CASE I - LOAD FIXED WITH RESPECT TO OUTER RING.

CASE II - LOAD FIXED WITH RESPECT TO INNER RING.

6/ THESE RATINGS ARE FOR OPERATION UP TO 250 °F. FOR OPERATION UP TO 350 °F, THE RATINGS SHALL BE REDUCED BY 20%.

7/ SPECIFIED LIMITS ARE FOR BEARINGS LUBRICATED WITH MIL-PRF-81322 GREASE. FOR BEARINGS LUBRICATED WITH MIL-PRF-23827 TYPE I GREASE, THE TORQUE LIMIT SHALL BE THE SPECIFIED VALUE IN THE TABLE MULTIPLIED BY 1.2.

REQUIREMENTS:

- MATERIAL:** RINGS AND BALLS: 52100 STEEL PER AMS6440 OR AMS6444

SEALS: POLYTETRAFLUOROETHYLENE (PTFE) PER AMS3652

SEAL RETAINERS: ANY CORROSION RESISTANT STEEL
- LUBRICANT:** MIL-PRF-81322 OR MIL-PRF-23827 TYPE I. ALL BEARINGS SHALL BE PACKED WITH AN 80% MINIMUM GREASE FILL CONFORMING TO MIL-PRF-81322 UNLESS OTHERWISE SPECIFIED. IF MIL-PRF-23827 TYPE I IS REQUIRED, ADD THE DESIGNATOR "G" AFTER THE MS27640 DASH NUMBER. MIL-PRF-23827 TYPE I SHALL NOT BE USED FOR OPERATION WHERE TEMPERATURES EXCEED 250 °F.
- HARDNESS:** HEAT TREAT RINGS AND BALLS TO 60-66 HRC AND STABILIZE FOR OPERATION AT 250 °F
- SURFACE ROUGHNESS:** RACEWAYS AND BALL SHALL HAVE A MAXIMUM SURFACE ROUGHNESS OF 8 µin Ra PER ANSI/ASME B46.1
- PLATING:** ALL EXTERNAL SURFACES EXCEPT BORE, SEALS AND SEAL RETAINERS SHALL BE PLATED .0003 TO .0006 THICK WITH:

(NO DESIGNATOR) CADMIUM IN ACCORDANCE WITH AMS-QQ-P-416, TYPE I, CLASS 2
DESIGNATOR "E" ZINC-NICKEL IN ACCORDANCE WITH AMS2417, TYPE 2, GRADE B
- RADIAL INTERNAL CLEARANCE:** WITHOUT "R" DESIGNATOR PART NUMBER INDICATES .0004 TO .0010 WITH "R" DESIGNATOR PART NUMBER INDICATES .0002 TO .0005.
- RADIAL ECCENTRICITY:** INNER RING, .0010 MAX, OUTER RING, .0016 MAX.
- LATERAL ECCENTRICITY:** INNER RING, .0010 MAX, OUTER RING, .0016 MAX.